PORTABLE COMPUTING, COMMUNICATION AND ENTERTAINMENT DEVICE WITH CENTRAL PROCESSOR CARRIED IN A DETACHABLE HANDSET

REFERENCE TO COPENDING APPLICATION

This application is a continuation of U.S. patent application Ser. No. 11/305,996 filed Dec. 19, 2005, hereby incorporated by reference, which is a continuation of U.S. patent application Ser. No. 09/719,290 filed Dec. 7, 2000, hereby incorporated by reference. This application also claims the benefit of PCT/US00/09188 filed Apr. 7, 2000 and U.S. Provisional Application Ser. No. 60/128,138 filed Apr. 7, 1999, hereby incorporated by reference.

TECHNICAL FIELD

The present invention relates in general to portable processor based devices that provide computing, communication or entertainment functionality. More particularly, the present invention pertains to portable processor based devices operable while being held in its user's hand and providing communications, organizer and/or entertainment functions, such as cellular telephones, palm-sized organizers, and MP3 players, and to portable processor based devices providing general computing capabilities, such as laptop or handheld personal computers (PCs). More specifically, the present invention relates to systems that detachably mate a plurality of portable processor based devices to provide their combined functionality in an integrated structure.

BACKGROUND ART

To address consumers' portable computing, mobile communications, and portable entertainment needs, a variety of portable devices have been developed. The distinctly differing requirements of each application has made it too costly and unwieldy for such devices to fulfil more than one type, or two closely related types of need.

For example, smart cell phones are devices that combine the capabilities of cell phones and electronic organizers. Typical of such devices are the Model PDQ-800 from Qualcomm, Incorporated of San Diego, Calif., and the Model R380 from Ericsson, Incorporated of Richardson, Tex. These products perform quite well as handheld computing and communication devices by allowing the user to access the Internet for email, stock quote, etc., while preserving their use as simple wireless phone units. However, in order to allow handheld grasping these units had to be kept small, thereby limiting their display to a size that is too small for practical use in conventional computing such as Web browsing, word processing, etc. Also, to keep the cost of such devices low, their designers employed central processors that have just enough power to carry out smart phone functions, and not enough power to handle general computing requirements.

Recently Motorola, Inc. of Schaumburg, Ill. has begun to sell its clipOn Organizer as an attachment to its StarTAC cellular telephone and provide it with smart phone functionality. The clipOn Organizer and StarTAC phone have been designed to operate as individual, standalone units that each furnish its own processor and power supply. Consequently, attaching the units does not achieve the reduced size or cost desired in an integrated combination.

For portable computing, the industry provides conventional laptop computers, such as those based on Pentium processors from Intel Corporation of Santa Clara, Calif. and

Windows software from Microsoft Corporation of Redmond, Wash., and mini-laptop computers, such as Microsoft WindowsCE based devices, called Handheld Personal Computers (HPCs). The industry has also furnished palm-sized devices for personal information management and organization such as the Palm Pilot from 3Com Corporation of Santa Clara, Calif., and Microsoft WindowsCE-based palm-sized PCs.

To fulfill the portable entertainment needs of consumers, the computer industry provides digital audio players, such as the Diamond Multimedia Rio model made by S3, Inc. of Santa Clara, Calif. that plays MP3 compatible audio content down-loaded from the Internet. Another portable entertainment device is the wireless system controller for home entertainment systems provided by Harmon/Kardon International of Woodbury, N.Y.

To fulfil both mobile computing and communications needs, a mobile worker has to carry two, and sometimes three devices—a smart phone unit, an organizer, and a laptop unit. Of course, if entertainment is also desired, the user must carry yet another device—the MP3 player. The user has to purchase and maintain multiple units—charging multiple sets of batteries and synchronizing data from one with that of the other. Consequently, there is a need for a device that provides a complete solution for mobile computing, communication and entertainment without having to own and maintain multiple units.

SUMMARY OF THE INVENTION

It is, therefore, an object of the present invention to provide a portable processor based device for mobile computing, communication and entertainment without having to acquire and maintain multiple units. Such device works in much the same way as conventional laptop computers. However, in the current invention, the central processor, communication circuit, speaker, microphone, and power supply are carried in a detachable handset. The detachable handset unit functions as a wireless phone unit. Also, by having its own display and keypad it can serve as an Internet appliance for email access and for downloading of information from the Internet, such as electronic books, audio books, digital music, etc.

For applications requiring larger display and keyboard, the detachable handset unit is docked into the main unit, the docking display unit. In this mode the detachable handset unit provides the processing and the communication power to the docking display unit. The combined unit is suitable for conventional computing such as Web word processing, and spreadsheet applications. The combined unit can also be used for reading downloaded electronic books.

The detachable handset unit has additional functions. It can be used as a portable digital audio player in one of two ways. First, by plugging a headphone into its jack, the user can listen to downloaded music or audio books. Second, by docking into the docking display unit, that contains larger speakers, the downloaded music or other content can be played back in much the same way as done by a standard PC or a laptop computer. The detachable handset can be equipped with appointment manager software, thereby functioning as a clock radio by itself or while docked with the docking display unit.

The detachable handset can be equipped with infrared transceiver for providing wireless optical communication with other compatible units such as those compatible with IrDA standard. With suitable software the detachable handset unit can be made to function as a remote control unit for TV, VCR and other home entertainment systems and appliances.